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IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicants: Kazuo KUBOTA et al.

For: Paper Quality Improver

Serial No.: 10/525 458 confirmation No. 3849

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Attorney docket: No.: 0425-1178PUS1

The Commissioner of Patents

Alexandria Virginia 22313-1450

DECLARATION UNDER 37 CFR 1.132

I, Zembei METWA, the undersigned, declare that:
I am one of the co-inventors of the invention as described and claimed in the above identified patent application.

I have carried out additional tests, procedures and results of which are described below.

Comparative Example 11 to 16

Six comparative polymer emulsions were prepared as below described. They were tested about physical properties and then paper making in the same way as described in the above identified patent application. The polymer emulsions, physical properties

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and paper making results are shown in Table 4, hereto attached.

<Production of Water-soluble polymer>

* Water-soluble polymer I

A 300 mL flask equipped with a reflux condenser, a dropping funnel, a thermometer, a nitrogen inlet and a stirrer was charged with 3.86 g acrylic acid, 42.50g dimethyl acrylamide, 13.64g laurylmethacrylate and 84.87g ethanol. The mixture was heated at 40°C and mixed with nitrogen gas flown. A solution of 0.13g azo-initiator, V-50 manufactured by Wako Pure Chemical Industries, Ltd., in 5g ethanol was added thereto. The mixture was then reacted at 65°C for 10 hour to obtain polymer I.

Then a 5 L beaker was charged with 4000 mL hexane. Polymer I was gradually added dropwise thereto, while stirred, to obtain re-precipitates of polymer I. The re-precipitated solid was washed with 1000 mL hexane and then dried at a reduced pressure at 70°C to obtain a dried polymer. Ion-exchanged water was added to the obtained polymer to obtain an aqueous solution of water-soluble polymer I having a solid content of 1%.

* Water-soluble polymer II

According to the above shown production method of water-soluble polymer I, polymer II was obtained by changing the polymerizable monomers to 29.71g dimethylaminopropyl acrylamide /trimethylammonium chloride, 23.15g dimethyl acrylamide and 4.57g of lauryl methacrylate and changing the

solvent to 104.18g ethanol.

Then the polymer was reprecipitated and then dried at a reduced pressure at 70°C to obtain a dried polymer. Ion-exchanged water was added into the obtained polymer to obtain an aqueous solution of water-soluble polymer II of a cationic polymer, having a solid content of 1%.

* Water-soluble polymer containing natural cationic polymer

98.5g ion-exchanged water was added to 0.5g cationic starch, Cato 308, manufactured by Nichiden Kagaku Co.,Ltd, as natural cationic polymer. The mixture was heated at 90°C for 1 hour to effect dissolution. The obtained solution was cooled to room temperature to obtain an aqueous solution of natural cationic starch. Then 1 g polyacrylamide, POLYSTOLONE 356 manufactured by Arakawa Kagaku Co.,Ltd, was added to the aqueous solution and the mixture was stirred at room temperature for 1 day. The product was found to be not emulsion, but a uniform transparent aqueous solution of cationic polymer.

In Table 4, HARMIDE EX-113 is a paper quality improver of Harima Kasei Co., Ltd., including an amphoteric polyacrylamide. MYTEND-1 is a paper quality improver of Mitsui Kagaku Corporation, including polyacrylamide. PAAm is polyacrylamide. CATO 308 is a cationic starch, manufactured by Nichiden Kagaku Co.,Ltd. POLYSTOLONE 356 is polyacrylamide manufactured by Arakawa Kagaku Co.,Ltd. AAm means acrylamide monomer.

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I hereby declare that all statements made herein of any own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United State Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: September 22, 2006 明和善平

Zembei MEIWA

1 sheet hereto attached: Table 4

Table 4

Comparative Example	Production example	Cationic polymer (A)				Polymer particle (B)				Physical property of emulsion	
		Kind[1]	N% (%)	Viscosity (mPa·s)	Added amount (relative to monomer)	VAc	MAA	DMAAm	Other monomer	Solids content (%)	Average particle diameter (μm)
Comparative example 11	Water-soluble polymer I	—	—	—	—	—	—	80	AA 10 LMA 10	—	—
Comparative example 12	Water-soluble polymer II	—	—	—	—	—	—	85	DAPAA-Q 30 LMA 5	—	—
Comparative example 13	HARMIDE EX-113	—	—	—	—	—	—	—	AAm as main	—	—
Comparative example 14	MYTEND A-1	—	—	—	—	—	—	—	AAm as main	—	—
Comparative example 15	PAAm	—	—	—	—	—	—	—	AAm 100	—	—
Comparative example 16	CATO 308 POLYSTOLONE 356										

Comparative Example	Performance of manufactured paper		
	Amount of internally added agent (relative to P%)	Improvement ratio of stiffness (%)	Improvement ratio of bulk (%)
Comparative example 11	1	4.6	-0.03
Comparative example 12	1	-0.7	-0.52
Comparative example 13	1	-0.8	-2.05
Comparative example 14	1	-5.2	-0.06
Comparative example 15	1	0.2	-1.03
Comparative example 16	0.5 1	-22.0	-3.59